REMARKS

Claims 27-42, 47-48, 51-54, and 64-82 are currently pending in the application. Claims 27, 34, 47-48, 51, 65, 67-68, 77-80 have been amended. Claims 40, 53-54, 64, and 71-76 have been deleted without prejudice. Claims 69-70 have been withdrawn from consideration. Claims 81-82 have been added. No new matter has been added.

The drawing objection from the previous Office Action has been withdrawn. The Applicant thanks the Examining Attorney for the withdrawal.

The Office further objects to the drawings under 37 CFR 1.83(a) stating that the drawing must show every feature of the invention specified in the claims. In particular, the Office states that the term "column" is not found in the disclosure and is not noted in the drawings. As such, it must be shown or the feature cancelled from the claim(s). The Applicant respectfully disagrees and traverses the rejection.

Although the Applicant traverses the rejection, the Applicant notes that claims 67, 78 and 79 have been amended to refer to "land areas" not "columns". The specification refers to the term land areas not columns (see e.g., page 13 at lines 1-2). Although the Applicant has amended the claims, the Applicant respectfully advises that one skilled in the art recognizes that these terms are interchangeable (see e.g., Valliencourt, col. 4, lines 55), and thus, asserts that this feature is found in the drawings.

The Office Action further states that newly submitted figures, namely, Figure 4d and Figure 11 has been disapproved. The Applicant withdraws these newly added figures. As such, the Applicant respectfully contends that this rejection is moot.

The Office further states that the rejections pursuant to §112, first paragraph with respect to claims 29, 69, and 70 have been withdrawn. Applicant notes that the Examiner has withdrawn claims 69 and 70 from consideration. Applicant respectfully disagrees with such withdrawals.

Regarding the restriction requirement, it is respectfully submitted that there should be no 'non-elected' species in this application and that the Office should reconsider previous demands to elect only partial embodiments. There is no support for the previous definition of separate classes of invention within this application. It is respectfully requested that the Office reconsider such demand for election of species

following consideration of the amendments to the claims and consideration of the submissions contained herein.

The Office rejects claims 37-42, 48, 64, 68, 74-76, 77, 78, and 79 pursuant to 35 U.S.C. 112, first paragraph, stating that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In particular, the Office states that there is no support for the reverse of the projecting portion occurring parallel to the reverse of the initiator portion. Regarding claim 74, the Office states it has not been adequately disclosed that the "initiator end resides in a first plane which is normal to the longitudinal axis of the container". Regarding claim 78, the Office contends that there is no support for the term column in the disclosure.

The Applicant disagrees and respectfully traverses this rejection. Regarding claims 37, 48, 64, 68, and 77, Applicant has adequately disclosed that the initiator portion 8 inverts (that is, it "reverse[s] relative to the direction of its projection"), which is followed by the inversion of the projecting portion 5. The structure of the container dictates that the inversion of the initiator portion 8 and the projecting portion 5 will be "in the same direction", and thus, the initiator portion 8 will be "in the same direction parallel to the reversal (i.e., inversion) of the initiator portion." See, in part, specification at 14, lines 12-14. Despite the traversal, the Applicant has amended these claims to remove the noted language. Further, claim 64 has been deleted without prejudice.

Regarding claims 74-76, 78 and 79, claims 74-76 have been deleted without prejudice. Claim 78 has been amended as noted above and claim 79 depends from claim 78. The Applicant respectfully requests that the Office withdraw this rejection in light of the amendments to the claims.

The Office further rejects claims 37-42, 48, 64, 74-76, 77, 78, and 79 pursuant to 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office recites the same reasons as set forth above for the rejection pursuant to §112, first paragraph.

The Applicant disagrees and respectfully traverses this rejection. The Applicant refers to his comments above, and requests withdrawal of the rejection in light of the amendments to the claims.

The Office further rejects claims 27-44, 47, 48, 51-54, and 64-68 pursuant to 35 U.S.C. 102(b) as being anticipated by Vailliencourt et al (US 5,341,946). The Applicant disagrees and respectfully traverses this rejection.

With respect to claim 27, the Office directs Applicant's attention to Figures 3, 7, and 9, and seems to contend that element 43 is a vacuum panel having a portion that "extends away from the plane of a lesser extent closer to 43b and to a greater extent closer to 43a". The Office further asserts that the panel (element 43) inverts and references Figure 9 as support for this assertion. The Applicant respectfully contends that the Office's assertions are baseless assumptions and are unsupported by the Vailliencourt reference.

General Response with respect to VAILLIENCOURT:

The Vaillencourt reference is directed to a container including a plurality of elongated absorption panels, wherein "each of the absorption panels has an outwardly projecting center portion". At the time of Vailliencourt, it was well known that the shrinkage of the container absorption panels upon the introduction of hot liquid and subsequent cooling of the liquid in the container created stress points at the top and bottom edges of the absorption panels and weakened the sidewalls. See col. 1, 50-59. In an attempt to resolve this problem, the vacuum panels began to include an outwardly projecting center portion adapted to flex inwardly. These outwardly projecting center portions allow the *vacuum* panel to "resist taking a permanent set when the vacuum panel is pushed inwardly." See col. 2, lines 59-61. This technique was known in the art (see col. 2, lines 53-57) and as noted in Vailliencourt did not entirely resolve the problem. See col. 2, lines 53-64. Indeed, according to Vailliencourt, this configuration "was not effective to prevent the vertical land areas [i.e., sidewalls] on either side of the vacuum panel from taking a permanent set when the land area is deflected inwardly". See col. 2, lines 61-64.

In an attempt to resolve this problem, the outwardly projecting center portions of the Vailliencourt container were divided into upper and lower panel portions by a transversely extending rib. These panel portions, that is, the upper and lower panel portions, were further "connected to the top and bottom of the *vacuum* panel by outwardly curved connecting portions" (emphasis added). These connecting portions provide "a reinforced surface which strengthens the vacuum panel at its upper and lower edges" (col. 3, lines 20-21) and "prevents the container sidewall from taking a permanent set when deflected inwardly" (col. 3, lines 22-23). The prevention of the sidewalls from "taking a permanent set" is the stated problem the Vailliencourt reference intended to resolve. (See e.g., col. 1, lines 50-68, and col. 2, lines 53-64).

As seen from above, and the Vailliencourt reference, the outwardly projecting centre portions of Vailliencourt cannot be regarded as being the flexure regions of the present Melrose invention. As stated above, although the outwardly projecting centre portions can flex inwardly, they are intended to stiffen the vacuum panel. See col. 2, lines 59-61. Indeed, Vailliencourt states that *"the outwardly projecting center portion 40 does not collapse inwardly or deform at any region within the center of the panel portion"*. See col. 6, lines 53-55.

The present invention clearly describes and illustrates the outwardly projecting flexure region of the vacuum panel as being flexible and capable of controlled collapse inwardly. See e.g., Melrose at 14, lines 20-21, lines 23-27. Further, in the present invention the flexure region is configured to reduce *in the amount of arc* projecting outwardly as pressure is applied, that is, to flatten as pressure is applied, and to even be capable of inverting. See Melrose at 14, lines 23-27 ("The gradual deflection of the projection portion 5 *to and from* inversion in response to a relatively small pressure differential ... means that less force is transmitted to the side walls of the container 1.") Indeed, the Melrose panel does not merely translate inwardly while maintaining its shape, including the amount of curvature of the panel. Rather, the amount of arc of the panel itself begins to reduce such that the outward curvature of the panel changes. In vast contrast, the "outwardly projecting center portion 40 (of Vailliencourt) does *not* collapse inwardly or deform" (i.e., its outward curvature or arc does not change) (see col. 6, lines 53-55) (emphasis added), and thus, by Vailliencourt's own description, does not invert.

Indeed, the outwardly projecting centre portion of Vailliencourt is not intended to reduce in curvature, nor collapse, nor have a section within it to provide for controlled collapse. Vailliencourt makes no claim to this effect. Vailliencourt makes no reference within the specification to the effect. For this reason, the outwardly projecting centre portion may not be regarded as the flexure region of the present invention.

As stated above, Vailliencourt does not claim the '*outwardly projecting centre portions*' to be new in themselves, and they are in fact found in much prior art to Vailliencourt. They are more commonly known as 'islands' to those skilled in the art. Such 'outwardly projecting centre portions' are rigid structures, and are provided, in part, to support the label as it is applied across the void of the vacuum panel. **Typical prior art is illustrated below:**

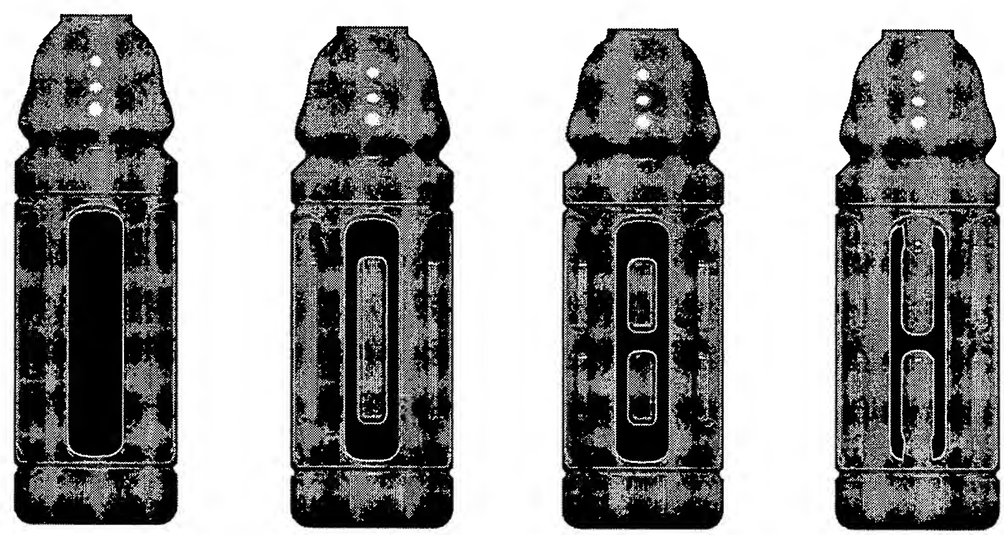

Figure 1 **Figure 2** **Figure 3** **Figure 4**

Figure 1 provides a typical flexible vacuum panel surface (dark [or red if in color] surface). To be flexible, prior art panel surface is nearly always flat or concave in order to be drawn further inwardly under vacuum pressure.

Figure 2 illustrates how the flexible surface of the vacuum panel may be interrupted by the addition of an ***outwardly projecting centre portion*** rib, or **'island'** to provide

structural support to the label as it is applied to the container. The flexible vacuum panel surface is below or behind the island (dark or red region).

Figure 3 illustrates how two islands may be utilised, and this has been found in art prior to Vailliencourt. The addition of such islands does <u>not</u> increase the flexibility of the panel surface. To the contrary, there is less flexible surface available to bend inwardly, so the panel does not draw into concavity to the same degree under the same vacuum pressure. Further, the islands, or 'outwardly projecting centre portions' do not bend and certainly do not invert, or they would not perform the intended function of supporting the label panel.

Figure 4 illustrates the Vailliencourt innovation: the addition of **'connecting portions'** to the 'islands' or 'outwardly projecting centre portions'. The purpose of the connecting portions is *not to cause* the outwardly projecting centre portions to collapse inwardly, but in fact to "hold the vacuum panel rigidly at its edges, but allow the outwardly projecting panel portion and connecting portions to flex inwardly" (col. 3, lines 13-16) and to prevent the sidewalls from deforming or "taking a permanent set". See col. 3, lines 21-24. The connecting portion, or any portion of the connecting portion, do NOT cause any element to move inwardly, including any other portion of the connecting portion (e.g., portion 43b does not cause inward flexing of portion 44c or 43a).

As discussed above, Vailliencourt contends that without the connecting portions the panel surface (referred to as the 'back surface 31' "each vacuum panel includes a vertically elongated back surface 31", see col. 5, lines18-19) flexes in too much and causes stress to be placed on the upper and lower vacuum panel regions. To overcome this problem, Vailliencourt attaches 'connecting portions' to the outwardly projecting centre portions.

The curvature of the connecting portions 43, 44 is convex outwardly, that is, convex. However, the curvature of the vacuum panel is convex inwardly, that is, concave. Thus, the connecting portion changes the geometry of the vacuum panel in "the region between the upper edge of the upper panel portion and the upper edge of the

vacuum panel." Col. 7, lines 53-58. A similar change in geometry is found in the "region between the lower edge of the panel portion 42 and the lower edge of the vacuum panel". Col. 7, lines 57-61. The change in geometry allows portions of the otherwise inwardly curving, or concave, vacuum panel to curve outwardly, thereby providing reinforcement at the top and bottom of the vacuum panel. Col. 9, lines 59-67. Vailliencourt states that "*[t]hese reversals in the configuration or shape of the vacuum panel at its upper and lower edges provide segments of vertically extending generally cylindrically shaped reinforced sections, which strengthen the vacuum panel at its upper and lower edges and prevent the portion of the sidewall along the upper edge and the panel lower edge, including the base and top of the columns 38, from taking a permanent set when deflected inward while the container is sealed and under a vacuum condition.*" See col 7 lines 61 – 68 to col 8, lines 1-2.

Clearly, the Vailliencourt connecting portions cause the upper and lower vacuum panel portions to be rigidified and stronger, thus prohibiting bending under vacuum pressure to the degree experienced without the connecting portions. The Vailliencourt 'connecting portions', or any portion of the connecting portions 43, 44, cannot, therefore, be construed to be the initiator portion of the present invention. The initiator portion of the present invention is the weakest part of the flexure region, i.e., the outwardly projecting portion with the least amount of arc, therefore immediately yielding to pressure and collapsing inwardly, *causing* the flexure region to then also collapse inwardly. See Melrose, page 14, lines 10-14 ("The vacuum panel 3 may flex at initiator end portion 9 followed by deflection and then inversion of the whole initiator portion 8 and subsequent continuation of inversion of the projecting portion 5."). In vast contrast, the Vailliencourt connecting portions are rigid structures, which although they can move inwardly as a whole, are designed to resist inward deformation, and to further prevent inward deformation of the outwardly projecting centre portions. Further, there is no suggestion, hint or teaching that the connecting portions 43, 44 of Vailliencourt progressively move inward, or move inwardly from one region to another, or invert. This assumption by the Office is unfounded and cannot be supported by the Vailliencourt reference. Rather, the Office has placed upon the Vailliencourt container features that do not exist, and by the stated configuration and operation of the container in Vailliencourt,

cannot exist and operate in the manner suggested by the Office. In this regard, the Vailliencourt reference fails to meet the language of claim 27 that "said initiator region can flex inwardly ...and cause said flexure region to progressively flex." No portion of the connecting portion 43, 44 *causes* any other portion to flex, let alone progressively flex. This is not an inherent feature of the Vailliencourt connecting portion and the Office has failed to provide any support in Vailliencourt for this assumption. As is commonly understood by those skilled in the art, these islands are designed to control the amount of inward flexing of the underlying vacuum panel upon which they are attached. As the underlying vacuum panel is pulled inward, it pulls the island or connecting portion inwardly without deforming any portion of the island or connecting portion, which by its nature, is stiff and intended to prevent deformation of portions of the vacuum panel and the sidewalls.

Further, the connecting portions of the present invention cannot be construed to be the connecting portions of the Vailliencourt invention. The connecting portions of the present Melrose invention are entirely different structures and are *not* outwardly projecting. The connecting portions of the present Melrose invention circumferentially surround the flexure region, but do not terminate for example within the upper portion of the vacuum panel, as do the connecting portions of the Vailliencourt invention. The connecting portions of the present invention simply connect the flexure region to the generally inflexible land areas, including those running vertically between the vacuum panels. The connecting portions of Vailliencourt never connect with the vertical portion of the land areas running vertically between the panels.

In summary, the Vailliencourt innovation is to provide '**connecting portions**' to join the 'outwardly projecting centre portions' to the top and bottom edge of the vacuum panels. Thus, the rigid 'islands' are extended in length to provide even further resistance against force directed to bend the flexible vacuum panel surface inwardly. The Vailliencourt connecting portions are intended to control the flexing of the vacuum panel by <u>strengthening</u> the adjacent area, that being the upper and lower vacuum panel flexure regions. Such strengthening is gained by causing the panel to be <u>less</u> flexible in this region. This is entirely in contrast with the present invention. The "flexure region" of Vailliencourt, as far as it has any equivalent to the "flexure region" of Melrose, is the

"back surface" 31 of Vailliencourt. The back surface is not associated with, or controlled by, any equivalent of the "initiator portion" of Melrose.

The 'connecting portions' of Vailliencourt may well be considered to extend away from the plane to varying extents, but Vailliencourt clearly states that these are rigidifying structures. They are not intended to reverse in curvature, that is, invert, as is at least one embodiment of the present invention, and their rigidifying, structural and functional nature is clearly defined by Vailliencourt in col 7 line 48 – col 8 line 2: "*As is shown in FIGS. 4 and 8A-8C, although the vacuum panel has raised center portions, the panel back surface 31 is recessed relative to the outer surface of the sidewall. The sides of the vacuum panel extend convex inwardly (that is, concave) whereas the connecting portions, such as connecting portion 43, extend convex outwardly (that is, convex). Thus, the connecting portion 43 changes the geometry of the portion of the vacuum panel in the region between the upper edge of the upper panel portion and the upper edge of the vacuum panel. Similarly, the connecting portion 44 changes the geometry of the portion of the vacuum panel in the region between the lower edge of panel portion 42 and the lower edge of the vacuum panel. These reversals in the configuration or shape of the vacuum panel at its upper and lower edges provide segments of vertically extending generally cylindrically shaped reinforced sections, which strengthen the vacuum panel at its upper and lower edges and prevent the portion of the sidewall along the upper edge and the panel lower edge, including the base and top of the columns 38, from taking a permanent set when deflected inward while the container is sealed and under a vacuum condition*". (Commentary added).

Further, the confusing reference to a 'reversal of curvature' indicated by Vailliencourt does not refer to a motional or reactive change in curvature of the outwardly projecting portions, such as an inversion of the panel, when under pressure as in the present invention. (See, Vailliencourt at column 6, lines 50 – 55: "… *enabling the two panel portions 41 and 42 to flex inwardly about the rib 45 and independently of one another, in such a manner that the outwardly projecting center portion 40 does not collapse inwardly or deform at any region within the center of the panel portion.)* Additionally, Figure 9 of Vailliencourt does not indicate any inversion of the panels. No figure of Vailliencourt refers to an inversion of the panels. No single part of the

specification refers to an inversion of the panels. The confusing reference to a 'reversal of curvature' refers to the structural combination of a concave panel surface intersected by a rigidifying convex structure, thus causing a reinforcing 'reversal of curvature' to be found within the passive structure. Figure 9 illustrates a slight inward movement of all structures under vacuum pressure, as will occur throughout the container, even including through the strong column region. Where the present Melrose invention provides for an outwardly projecting arc to weaken and invert inwardly through yielding to vacuum pressure, Vailliencourt repeatedly refers to the strengthening nature of the outwardly projecting portions and connecting portions, as in col 9 line 59 – col 10 line 3: *"In the illustrated embodiments, the vacuum panel projects inwardly relative to the outer surface of the container, and the connecting portions change the geometry of the vacuum panel from convex inward to convex outward, so that the portions of the vacuum panel between the raised center panel portions and the upper and lower edges of the vacuum panel curve outwardly, providing reinforcement at the top and bottom of the vacuum panel. This reinforcement substantially prevents the container sidewall from taking a permanent set, particularly when deflected inwardly at the top or at the base of the vertical land areas which separate adjacent vacuum panels".* And further at Col 10 lines 7-10: *"This stiffens the vacuum panel at its corners, providing increased strength at the corners of the vacuum panel and at the sidewall adjacent to the corners of the vacuum panel."*

Further, in Figure 9, the innermost dotted line appears to represent the back surface 31. It is clear from Figures 3 and 4 that the back surface 31 resides behind the outwardly projecting portions 41, 42 and the connecting portions 43, 44. Thus, the inward flexing and illusionary inversion illustrated in Figure 9 is that of the concave back surface 31 (the innermost dotted line) which is intended to flex inwardly upon an increase in vacuum pressure. Portion 43 resides on top of the back surface 31, and is NOT inverting as suggested by the Office. In this regard, the Office is making a supposition, which, at most, is unclear by the figure and quite clearly, is not explained or taught in the disclosure. The seeming ambiguity presented by Figure 9 should not be subsidised by the Applicant.

Regarding claim 29, the flexure region of Vailliencourt is clearly defined as the 'back surface' 31 and is clearly indicated to project inwardly, not outwardly as in the present invention. Thus the flexure region of Vailliencourt does not lessen in outward curvature, since it does not start with outward curvature. In contrast Vailliencourt increases in inward curvature (i.e., the inward curvature of the back surface increases) as vacuum pressure builds. With respect to the outwardly projecting portions within Vailliencourt, they are clearly defined as being rigid structures and are never defined or referred to as lessening in outward curvature when under vacuum pressure. In contrast, their function is to maintain outward projection while being moved inwardly by the back surface 31 to which they are attached, in order to maintain their intended function of strengthening the area of vacuum panel to which they are attached and to also provide label panel support. The outwardly projecting portions of Vailliencourt would fail completely to fulfil their function should they invert or lessen in curvature.

Regarding claim 30, Vailliencourt has no equivalent to the initiator or outwardly convex flexure region of the present invention. The back surface 31 of Vailliencourt is the nominated flexible portion of the vacuum panel and is the only portion intended to change in curvature under vacuum pressure, and this structure is inwardly curved. As already discussed the outwardly projecting portions of Vailliencourt, that do vary in outward extent, are not intended to vary in outward projection from their attachment point to the back surface 31. The outwardly projecting arcs of the present invention vary in outwardly projecting extent relative to their attachment points to the panel sides. Thus the outwardly projecting portions of Vailliencourt are translated inwardly, but do not vary in **outwardly** projecting extent within themselves. For example, and for purposes of illustration only, consider the panel 43 as being the equivalent of a solid board of material moving on the surface of a trampoline. The board of material moves inwardly and outwardly relative to the frame of the trampoline but the plane of the board of material does not itself flex. The"trampoline surface" of Vailliencourt is, of course, the back surface 31, which is what is flexing, not the board of material, that is, not the connecting portion 43. Thus, claims 30-33 are allowable.

As previously discussed, Vailliencourt does not provide for the outwardly projecting portions to invert, and Figure 9 does not show any inversion. All dotted lines

are simple minor translations of the full lines to a slightly more inward position, with all lines maintaining their original relationship to each other. Thus, there is clearly no inversion shown. Further, Vailliencourt only uses the text 'invert' once in the entire specification, and this is found in Col 6 lines 10-11: *"... the portions 38b of the column 38 have the general appearance of an inverted trapezoid"*. Regarding claim 38, the Applicant does not understand the Office's comments as claim 38 is not directed to an outward projection. In light of the above, claims 34-38 are allowable.

Regarding claims 40 and 41, claim 40 had been deleted without prejudice and claim 41 is dependent upon revised Claim 37. As discussed above, Vailliencourt nominates the 'back surface 31' to be the flexure portion, and such portion is not arcuate outwardly.

Regarding claim 42, claim 42, being a dependant claim of Claim 37 refers to outward movement also requiring an inversion of the curvature. No such inversion is anticipated in Vailliencourt. Further, outward bulging under stress anticipated to occur in Vailliencourt cannot be construed to be the equivalent inversion procedure of the present invention. No inversion is ever anticipated by Vailliencourt.

Regarding claim 47 and 48, both Claims 47 and 48 have been amended, and it is contended that Figure 9 does not claim to show any equivalent structures that undergo 'progressive' deflection in the manner performed by the present invention. The simple structures of Vailliencourt may well undergo progressive deflection, but this is not claimed nor shown to occur within Vailliencourt. Nevertheless, it is contended that the structures are entirely different and operate in a different manner and to different effect.

Regarding claims 52-54, it is accepted that the connecting portions of Vailliencourt do contain curved portions, but as previously discussed, these portions are not the equivalent initiator and flexure portions of the present invention. Further, claims 53-54 have been deleted without prejudice.

Regarding claims 64, 65, and 68, claim 64 has been deleted. Claim 65 requires "said flexure initiator region being located nearer the longitudinal centre of the flex panel than either end". This language is not met by Vailliencourt. Claim 68 is allowable for the reasons set forth above.

The Office further rejects claims 27-42, 47, 48, 51-54, 64-68, and 71-80 pursuant to 35 U.S.C 102(e) as being anticipated by Krishnahumar et al (US 5,971,184). The Applicant respectfully disagrees and traverses this rejection.

General Response with respect to KRISHNAKUMAR:

As a general principal, a vacuum panel surface comprising a 'double convexity' has a surface that is convex in both the vertical and transverse planes. The regions that are longitudinally displaced from the central flexure region are less outwardly projecting, but have <u>greater</u> amounts of arc. The less outwardly projecting regions may generally be considered to encircle or surround the central region, and therefore provide <u>support</u> to the central region, due to having a greater amount of arc than the central region. This phenomenon lies behind the strength of dome-style roof structures.

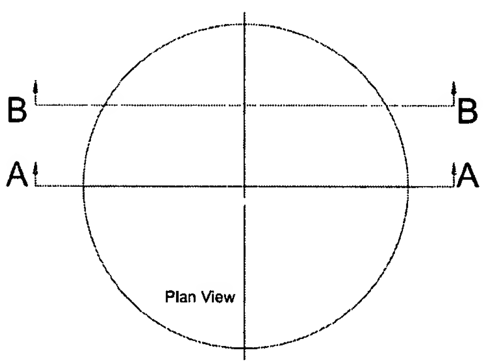

FIGURE 1A

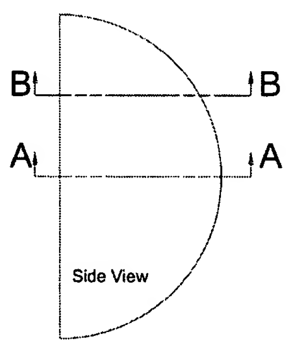

FIGURE 1B

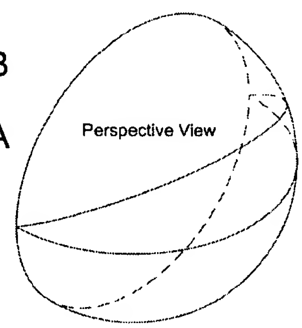

FIGURE 1C

Referring to Figures 1a-c above, a panel surface that is completely convex in both the vertical and horizontal, ie a dome as shown in perspective in Figure 1c, will have a curvature relative to the vacuum panel plane (viewed in cross-section in Fig 2). Figure 1a is a plan view of the panel, parallel to the longitudinal axis and the plane of the vacuum panel. The transverse plane runs parallel to lines A-A and B-B, and defines perpendicular cross-sections of the panel and container.

A cross-section taken through the middle of the panel (A-A) in the transverse direction yields a certain amount of arc (shown in cross-section in Figure 2 below). A

cross-section taken longitudinally away from this (B-B) yields a different amount of arc (shown in cross-section in figure 2 below).

As illustrated in Figures 1 and 2 above and below, even though the portion of a double convex panel taken through line B-B is less outwardly projecting, it will actually possess a stronger amount of arc. For the perfect dome shown in these illustrations, the radius of curvature at section B-B is 11.5, whereas at Section A-A it is 13.3. Thus, Section B-B, while outwardly projecting to a lesser extent, actually has a lower radius of curvature, meaning the amount of arc is greater than at Section A-A.

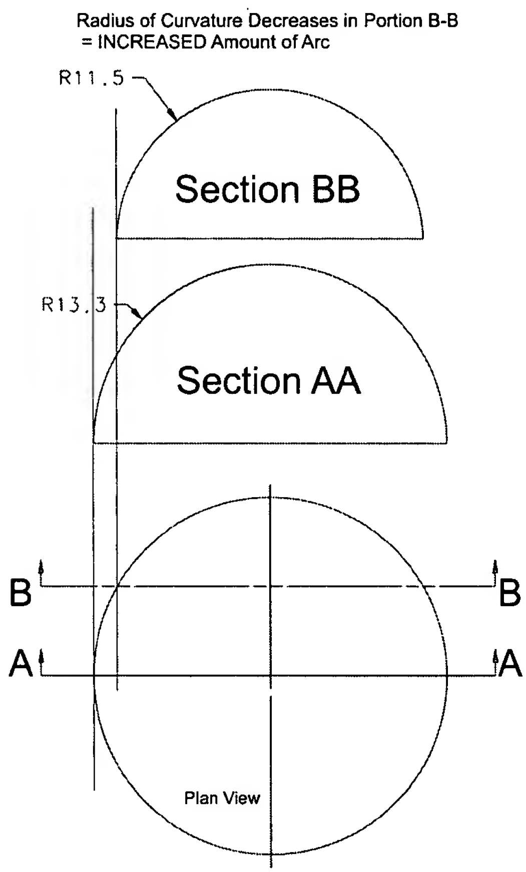

FIGURE 2

Krishnakumar discloses a vacuum panel that is convex in both the longitudinal and transverse extents. It is a double convex structure, although not as convex as the dome illustrated above. Despite this, the disclosed regions of less outward projection do not

comprise an amount of arc that is *less* than in the flexure region, as required by claim 27 ("said flexure initiator region having a lesser amount of arc...than said flexure region").

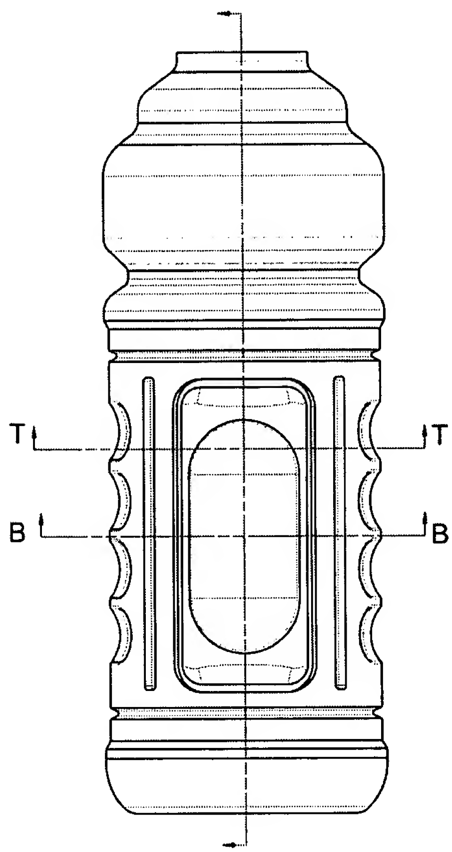

FIGURE 3
(Krishnakumar Fig 1)

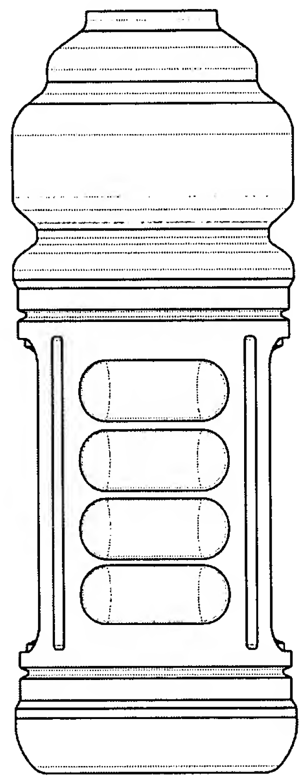

FIGURE 4
(Krishnakumar Fig 2)

Comparing the amount of arc contained within the flexure region (B-B) and the region of less outward projection (T-T) reveals that by lowering the convexity of the double curvature to a minimum, the less outwardly projecting portion (T-T) still maintains an amount of arc equal to the flexure region.

Referring to Figures 6a and 6b below, the cross-section at T-T is less outwardly projecting but has the *same* radius of curvature in order to create the panel shown, whereby the transverse extent of arc closes off in the manner illustrated in Figures 1 and 7 of the Krishnakumar patent citation.

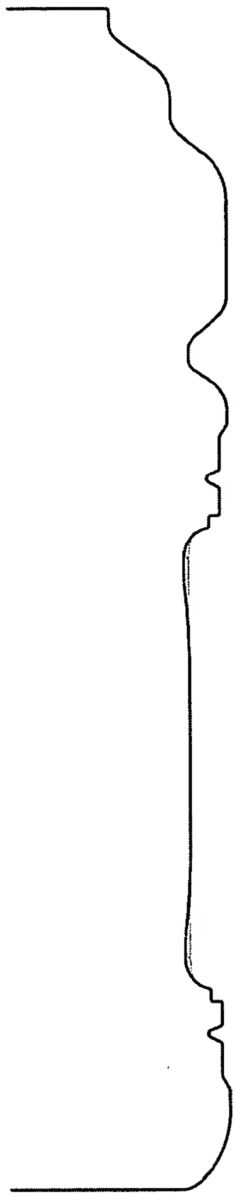

FIGURE 5
(Krishnakumar Fig 6)

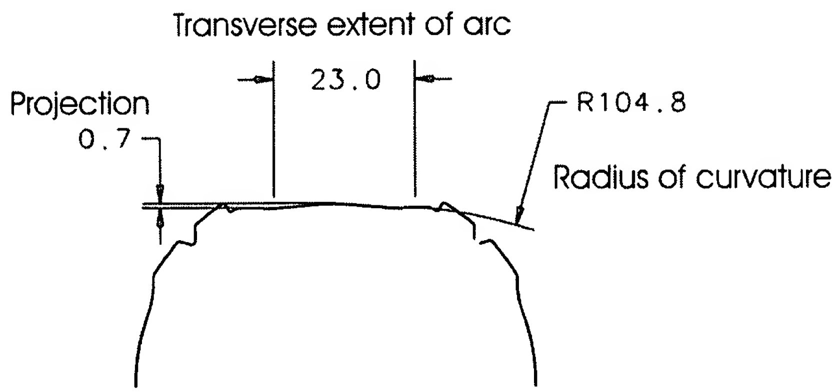

FIGURE 6a
Cross-section T-T Fig 3

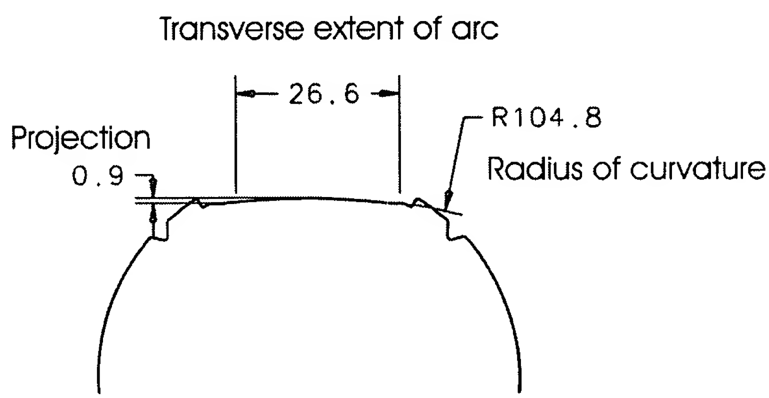

FIGURE 6b
Cross-section B-B Fig 3

As previously stated in responses to the examiner, and in the specification of the present invention, it is undesirable to construct panel surfaces having double convexity. Such structures as disclosed in prior art do not provide for initiator portions having a less amount of arc, whereby reaction to pressure will occur at earlier thresholds than in a flexure portion.

To further illustrate this point, the Applicant has even reconstructed containers employing such double convexities to show the examiner how they do not in fact invert in any controlled manner as proposed by the Office which is unsupported by the specification of the patents. The reconstruction of these containers was necessitated by the complete lack of commercialization of such concepts, and thus the unavailability of such panel shapes. In contrast, the present invention has been made commercially successful throughout the United States and in foreign countries.

Krishnakumar does not disclose, anticipate, nor provide for an initiator region that "causes said flexure region to progressively flex" or have a less amount of arc than the flexure region. Indeed, Krishnakumar fails to teach or disclose an initiator region at all. Although the Office states that the edge around the panel is the initiator portion, there is simply no support for this assertion in the specification. In contrast, Krishnakumar, column 4, lines 15-26 describes the inversion of the invertible wall portion 56. There is no suggestion or teaching that the edge is an initiator portion. Rather, as negative pressure builds within the container it causes, "the convex central wall portion to move radially inward, and adopt a first concave position 56'." Col. 4, lines 16-18. Additionally, to further alleviate negative pressure, "the entire vacuum panel 20, 22 and portions 58 of the panel wall 19 ... move radially inwardly (56", 58")." Col. 4, lines 19-22. There is no suggestion or teaching that the edges cause or initiate the radial movement of the wall portion 56, and thus, the Office's assertion is unsupported by the specification.

In the absence of an initiator region as found in the present invention, the flexure region of Krishnakumar does not deflect in the same controlled manner as the present invention. Instead, Krishnakumar provides for a panel having a first concave position, see col 4, lines 21-24 *"This causes the convex central wall portion to move radially inwardly, and adopt a **first** concave position 56' (as viewed from the outside of the container), shown in dashed lines in FIG. 4."*

Neither the specification nor figures disclose any positions for the inverted panel other than a first concave position. This suggests that the Krishnakumar panel "flips" at a given pressure, and thus, does not "progressively flex[] in response to increasing pressure change" as required by claim 27. In contrast, the Krishnakumar panel "flips". The

Melrose disclosure teaches away from a panel that "flips" and distinguishes between a panel that 'flips' and one that progressively flex[ ] ("the inversion of the projecting portion 5 may progress steadily" Melrose, at 14, lines 20-21). Melrose has distinguished his panel as progressively flexing rather than flipping. This distinction cannot be ignored. In light of the above, it is clear that Krishnakumar fails to meet the language of claim 27 as the Krishnakumar panel does not "progress steadily", but rather, "flips", and a reading of the Krishnakumar specification as including a "progressively flexing" panel is clearly unsupported. Indeed, the Office references no language to support this supposition, and merely references Figure 6, which as explained in the Krishnakumar specification, does not support this interpretation.

Krishnakumar opts for controlling the vacuum panel deflection by employing hinge ribs in vertical displacement next to the vacuum panels. Krishnakumar provides a panel that moves between one position and another.

For the Krishnakumar panel to invert, force must be applied to overcome the flexure region itself, as the less projecting areas require just as much force due to having the same amount of arc. Thus the panel, if able to invert at all, will do so only at maximum pressure threshold, and will do so in a single motion.

Regarding claims 27-42, 48, 68, and 71-80, the claims now disclose the amount of arc present in the initiator and flexure region. The initiator portion of the present invention in claims 27-42, 48, 68, and 71-80, has a lesser amount of arc than the flexure region. (See Melrose, at 16, lines 5-6 "the arc of curvature progressively increasing away from the initiator portion 8.") Krishakumar does not disclose, nor provide, an initiator portion having a lesser amount of arc than the flexure region. As there is no equivalent of the initiator portion of the present invention, the flexure region of Krishnakumar is not affected in the same controlled manner. Krishnakumar is controlled by a circumferential 'hinge' portion, and 'flips' or 'snaps' from one position to another. See Col 2. lines 2-9: *"Each vacuum panel has an invertible central wall portion movable from a convex first position prior to hot-filling of the container, to a concave second position under vacuum pressure following hot-filling and sealing of the container. Preferably a pair of vertically-elongated and radially-indented ribs are provided in the panel wall, adjacent either side of each vacuum panel, which act as hinge points to facilitate movement of the*

central wall portions." The present invention has no equivalent of the 'hinge' portion of Krishnakumar. Further, Krishnakumar fails to teach or suggest a continuation of inverstion or "progressive flip" in the panel. Rather, the panel moves from a first position *prior* to hot-fill to a second position under vacuum pressure. There is no teaching or suggestion that the movement is progressive. Rather, the panel "flips" instantly.

Regarding Claims 47, 51-52, and 65-67, the initiator portion of the present invention is displaced *between* the flexure portions. The flexure portions project outwardly to a greater degree than the initiator portion. Krishnakumar is constructed in the reverse to this. Krishnakumar discloses the region of greatest outward projection to be in the middle of the panel. The present invention provides for the initiator portion to be located in the middle region of the panel, and so this region comprises the least amount of outward projection. Krishnakumar provides for the surrounding regions, and specifically the regions longitudinally displaced from the central region, to be less outwardly projecting. The present invention provides for the reverse of this situation, in that the regions longitudinally displaced from the central initiator portion, and toward opposing ends of the panel, to be the more outwardly projecting.

Regarding the Office's statement that "the panels will respond gradually to the change in pressure since the containers cool gradually and the pressure change is gradual", the Applicant respectfully disagrees, in part. Since the container cools gradually it is accepted that the panels will respond gradually to the change in pressure within the part of the panel that has a *concave surface,* as do most prior art vacuum panels. Krishnakumar discloses the portion of the panel that surrounds the convex central portion to be concave. However, movement within the convex central portion is not gradual. Indeed, the reference only states that the panel assumes a first concave position. See col 4, lines 13- 19: *"Once the container is hot-filled and capped, the product begins to cool and generates a negative pressure inside the container. This causes the convex central wall portion to move radially inwardly, and adopt a first concave position 56' (as viewed from the outside of the container), shown in dashed lines in FIG. 4."*

The movement shown in Fig 4 does not refer to progressive movement, but refers to 2 stages of movement, namely, an initial flip inversion of the panel followed, at times,

by a further inward translation of the vacuum panel. This does not represent progressive movement. Krishnakumar discloses that after assuming a first concave position (the flip inversion) during the first stage of movement, there is a second position available. However, the second concave position discussed in Krishnakumar is merely further inward radial movement by the "entire vacuum panel 20, 22 and portions 58 of the panel wall 19 adjacent the vacuum panels". Krishnakumar, col. 4, lines 20-22.

This second inward position is enabled by the hinge portions that are displaced longitudinally beside the panel, that provide for the outer land areas to move radially inward, thereby displacing the entire panel inwardly in its entirety. See Col 4, lines 19 – 26: *"To further alleviate the negative pressure, the entire vacuum panel 20, 22 and portions 58 of the panel wall 19 adjacent the vacuum panels, move radially inwardly (56", 58') as shown in dashed lines in FIG. 4. The vertical ribs 52 act as hinges which allow this further movement of the panel wall and vacuum panels, without undue distortion of the container."* In contrast to this, the present invention provides for controlled deflection to *any* position between the convex first position and a concave final position. There is no provision for necessary hinge portions to contribute to such movement.

Regarding claim 29, claim 29 refers to the outward curvature *lessening* under vacuum pressure in controlled and gradual response to force, i.e., "said *flexing* of said flexure region results in an outward curvature of said flexure region lessening" (emphasis added). The claim language is directed to a section of curvature contained within the flexure region decreasing in outward projection *under vacuum force*. The Office is referring to different curvatures contained within different regions of the panel. However, this interpretation is not consistent with the claim language.

Regarding claim 69, claim 69 is dependent to Claim 51, which is in turn dependent to the newly amended Claim 47. As referred to above, Claim 47 provides for the initiator portion to be placed relatively centrally on the panel, and longitudinally between a flexure portion above, and a flexure portion below. As such, the central initiator portion is the less outwardly projecting portion, as opposed to the Krishnakumar citation. To be understood, Claim 69 refers to the example of a panel whereby there is an initiator portion (for controlling each flexure region), whereby the initiator region further

contains a flattened portion, roughly in the middle of the panel, in addition to the regions comprising minimal amounts of projection.

Regarding claim 42, a rise in pressure will cause any container surface to move outward to a degree, as plastic is partly elastic and this is particularly affected by geometric arrangement. Claim 42 refers to the adaptation of the geometry to be particularly suited to such pressure. By providing an initiator portion adjacent to the flexure portion, internal pressure will be able to move such portions outward to a far greater degree and at lower thresholds of pressure than any other panel found in prior art.

Regarding claims 71-80, see the discussions of the previous claims above. Further, claims 71-76 have been deleted without prejudice and thus, this rejection is moot with respect to these claims.

The Office further rejects claims 27-42, 47, 48, 51-54, 64-68, and 71-80 pursuant to 35 U.S.C. 102(b) as being anticipated by Weckman (US 4,387,816).

Regarding claims, 27, 37, 48, 64, 65, 68, 71-73, 77, and 80, claims 64 and 71-73 have been deleted, and all other claims (27, 37, 48, 65, 68, 77 and 80) have been amended so the claimed structure is not present or anticipated by Weckman (US 4,387,816).

The vacuum panels provided by Weckman are intended to be covered by labels, and as such may only be constructed of a single outward curvature. A label may only be applied to a panel surface that curves in a *single* direction only, for example in a cylindrical or circumferential direction. Otherwise the label stock, particularly paper, will not apply evenly to the surface. Label stock can not curve in both the transverse and vertical directions at the same time

In the case of Weckman the panel surface is outwardly curved, such that there is transverse curvature. In the first embodiment shown in figures 1-4, the outward curvature is extruded along a vertical plane, or parallel to the longitudinal axis of the container.

In the alternative embodiment shown in figures 5-9, the outward curvature is extruded along a plane that is angled inwardly from bottom to top relative to the longitudinal axis of the container.

However, while the plane of the vacuum panel is angled such that it is not parallel to the longitudinal axis of the container, the curvature is uniform along a single plane within the vacuum panel itself, otherwise a label could not be applied to the panel. This results in the panel not having any curvature in the vertical direction, as seen in Figure 6.

Referring to Figures 5-9, the claimed structures are not shown. Figure 8 shows a transverse section through the vacuum panel of Figure 5 of Weckman, at line 8-8, near the lead line 92. Figure 9 shows a transverse section through the vacuum panel of Figure 5 of Weckman at line 9-9. The outward curvatures shown in Figure 8 and in Figure 9 have the same amount of arc. An optical illusion creates the impression that the amount of arc contained in Figure 8 appears to be less than the amount of arc contained in Figure 9. However, this is not the case, or a label could not be applied to the panel.

An expanded view of both curvatures shown in Figures 8 and 9 of Weckman reveals that the panel contains the same amount of arc. Figure 8 is shown above Figure 9. The smaller dotted line shows the curvature of Figure 8 and the larger dotted line shows the curvature of Figure 9. They are repeated adjacent to each other to show how they are derived from the same radius of curvature, and therefore have the same amount of arc, even though they are transversely radiating to different degrees.

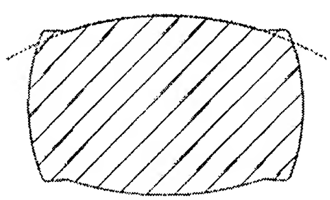

FIG. 8

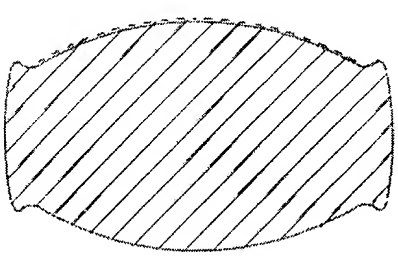

FIG. 9

Weckman refers to this in the specification. Refer to Col 5, lines 35 – 55 "*The label panels 84 and 86 are both transversely convex. The vertical portions of the label panels 84 and 86 are composed of a continuous series of straight lines which are angled inwardly from the bottom of the container toward the top, such that the entire label panel is transversely convexed and tilts inwardly of the container from bottom to top. This compound geometry of transverse convex curvature and vertical uncurved design is necessitated by the fact that the central portions of the label panels 84 and 86 bear product identifying labels of the container 70. The vertical dimension of the label panels 84 and 86 cannot be curved, since a compound curve may not be fitted with a two dimensional label. A label on a compound curve surface will crease or spontaneously detach after adhesion to the container label surface. Such creasing or detachment is aesthetically unfavorable and is avoided by transverse convex curvature of the label panels 84 and 86 while maintaining a vertically straight geometry.*"

Weckman does not disclose an inverting panel. Weckman does not use the word 'invert' anywhere in the specification. In a 2 panel container as disclosed it would not be possible for the panels to invert under vacuum pressure force. Thus, the Weckman panel does not "reverse relative to the direction of its projection" as required in claim 37.

The hinges 92 allow for the panels to draw closer together under vacuum force. However, the hinges may not be construed to be the initiator portion of the present invention. Weckman provides for hinge structures to allow the panels to collapse slowly inward toward each other. Such hinge structures are not part of the outwardly curved vacuum panel surface, and concentrate the collapsing forces away from the vacuum panel. See Col 6, lines 46-52: "*As they collapse inwardly the upstanding rim, which is more rigid than the flexible hinge portions, forces the stresses to be concentrated in the flexible hinge areas. The concentration of the collapsing forces due to the inward movement of the label panel in the hinge area isolates such forces from the neck, bottom and sidewalls of the container.*"

In contrast, the present invention provides a vacuum panel surface that has varying degrees of curvature such that the panel itself absorbs vacuum force and deflects inwardly in a controlled manner, whereby the panel surface does not have a uniform curvature.

Regarding the Office's response to arguments, the Applicant refers the Office to the previous arguments regarding Krishnakumar. As previously indicated, Krishnakumar refers to only 2 positions for the portion of the vacuum panel that is outwardly curved, or convex. The outer portions of the vacuum panel are concave or inwardly curved. The central portion is convex in both the vertical and transverse directions. Krishnakumar discloses a preliminary convex position, prior to build-up of vacuum pressure. This is shown as position 56. Krishnakumar discloses a *first* concave position, following vacuum pressure build-up. This is shown as 56'. No other position is provided for this invertible portion of the vacuum panel. Krishnakumar does not disclose any gradual inversion of the convex portion, just a single inverted position. Krishnakumar teaches a second overall concave position for the panel, but this does not include a second position for the invertible central portion, which is the initially outwardly projecting portion. This second position is derived from the portions of the vacuum panel that are already concave being drawn into further concavity by the surrounding hinge-like structures. The first concave position, 56', and the second concave position, 56", are no different within the invertible portion of the vacuum panel.

Further, as previously indicated, the portions of the panel that are displaced from each other in Krishnakumar are not disclosed to have different curvatures, whereby the portion that is less outwardly positioned has a lesser amount of arc. The portions in fact have the same amount of arc, yet have different amounts of projection. The present invention discloses an initiator portion having a lesser amount of arc projection than the flexure portion.

With respect to the Vailliencourt, Applicant does not disagree that Vailliencourt provides for a gradual movement in response to increasing vacuum pressure. The portions of the container that are displaced from each other that may have different curvatures are not the equivalent of the structures of the present invention, however.

Vailliencourt does not disclose an initiator portion having a lesser amount of arc than a flexure portion to which it is continuously joined. Vailliencourt provides for the only flexible portion of the vacuum panel to be concave, and to remain concave and only be drawn into further concavity under vacuum pressure. This is referred to as the 'back surface' in the specification.

Vailliencourt does not anticipate, nor disclose any lessening, nor inversion of such curvatures. Vailliencourt provides such structures as stiffening members, specifically designed to resist such inward movements. Vailliencourt never refers to such structures as being capable of providing less resistance to vacuum force, such that increased flexibility is gained. In contrast, they are provided to rigidify the vacuum panel, such that it may resist the forces better, rather than yield to them.

The Applicant believes that the claims are in condition for allowance, and respectfully requests that the Office pass these claims to allowance. The undersigned invites, and respectfully requests, the Examiner to call the undersigned to discuss any issues which the Examiner believes remain unresolved.

Respectfully submitted,

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AMV/sae